REMARKS

New claims 25 and 26 are supported by, for example, paragraph 21.

A. Claims 1 and 23

Claims 1, 3-9, 14, 16, 17, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dolan, US Patent 4,566,170. Applicant respectfully traverses the rejection. Claim 1 recites, among other things, "wherein a path from the at least one copper layer to the ceramic core is thermally conductive." In Dolan's device, a silver epoxy layer 16, which is 1 mil thick, connects copper pallet 14 to substrate 12. The Examiner has pointed to no teaching in Dolan that adhesive layer 16 is thermally conductive.

In particular, the Examiner has pointed to no teaching in Dolan of a substrate, which according to claim 1 includes "a ceramic core and at least one copper layer overlying the core," having "a thermal conductivity of at least 24 W/m·K" as recited in claim 23. Claim 23 is thus allowable over Dolan for this additional reason.

Claims 3-9, 14, 16, and 17 depend from claim 1 and are therefore allowable over Dolan for at least the same reason as claim 1.

B. Claim 9

Regarding claim 9, the Examiner states "Dolan does not expressly disclose the copper layer having a thickness of at least 4, or between 4-24 mils. However, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the layer having such a large thickness in order to adjust the heat radiating properties of the layer." Applicant respectfully submits that the Examiner's reasoning is flawed for two reasons.

First, Dolan teaches at column 3 lines 2 and 3 that "the thickness of the copper slab 34 is preferably 30 to 60 mils." This thickness is substantially thicker than the thickness taught in claim 9. Dolan teaches at column 4, lines 19-21 "the copper pallet 18 [sic] forms a highly conductive heat path to rapidly disperse heat generated at each LED site." A person of skill in

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the art would realize that reducing the thickness of the copper pallet, as the Examiner proposes, would reduce the ability of the copper pallet to disperse heat. Since Dolan specifically emphasizes the need to rapidly disperse heat, a person of skill in the art would not be motivated to reduce the thickness of the pallet.

Second, Dolan teaches at column 2 lines 35 and 36 that "monoliths 18 are secured to the copper pallets 14." The copper pallets provide mechanical support to monoliths 18. A person of skill in the art would expect that if the thickness of the copper pallet was reduced, as proposed by the Examiner, the strength of the pallet would be compromised, and the pallet could bend, damaging the semiconductor.

For the above two reasons, a person of skill in the art would not be motivated to reduce the thickness of Dolan's copper pallets as proposed by the Examiner. Claim 9 is therefore allowable over Dolan for this additional reason.

C. Other dependent claims

Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dolan as applied to claim 1, further in view of Applicant's admitted prior art. Claim 2 depends from claim 1. The Examiner's analysis of claim 2 adds nothing to the deficiencies of Dolan with respect to claim 1. Claim 2 is therefore allowable for at least the same reason as claim 1.

Claims 10-13 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Dolan as applied to claim 1, further in view of Whitworth et al., US Patent 6,642,550. Claims 10-13 and 15 depend from claim 1. The Examiner's analysis of these claims adds nothing to the deficiencies of Dolan with respect to claim 1. Claims 10-13 and 15 are therefore allowable over Dolan and Whitworth et al. for at least the same reason claim 1 is allowable over Dolan.

Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Dolan as applied to claim 1, further in view of Kobayashi et al., US Patent Application Publication

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2004/0017005. Claim 24 depends from claim 1. The Examiner's analysis of claim 24 adds nothing to the deficiencies of Dolan with respect to claim 1. Claim 2 is therefore allowable over Dolan and Kobayashi et al. for at least the same reason claim 1 is allowable over Dolan.

In view of the above arguments, Applicant respectfully requests allowance of all pending claims. Should the Examiner have any questions, the Examiner is invited to call the undersigned at (408) 382-0480.

Submitted Electronically

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